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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/512,034	10/20/2004	Heinz-Peter Rink	PAT-01033	2212

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EXAMINER
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TESKIN, FRED M

ART UNIT	PAPER NUMBER
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1713

DATE MAILED: 06/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/512,034

Applicant(s)

RINK ET AL

Examiner

Fred M. Teskin

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 102004.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_.

The preliminary amendment of October 20, 2004, has been entered in full.

Claims 1-9 are currently pending and under examination.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-8 are rejected under 35 U.S.C. 102(b) as being anticipated by US 4956433 to Mezger.

Mezger describes telechelic polymers based on *ethylenically unsaturated* monomers, *radically polymerized* by dithiocarbamate initiators (col. 2, lines 1-4). Preferred dithiocarbamate compounds are defined by reference to formulae depicting from one (n=1) to four (n=4) thiocarbamate functional groups in a single compound (*id.*, lines 20-35 and 67).

Insofar as the “free-radical (co)polymerization ...” recitation of claim 1 implies a free radical initiator apart from the “at least one thiocarbamate-functional organic compound”, attention is drawn to column 7, lines 55 *et seq.*, where Mezger states: “other initiators, for example, peroxide or azo initiators can be used in addition to thiuram disulfides in the manufacture of the ... polymers.” Peroxide and azo initiators are of course well known free-radical initiators and thiuram disulfides contain two thiocarbamate functionalities connected via an S-S linkage (*cf.*, formula (I) in col. 2).

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As to claims 4 and 8, it is not seen wherein the naming of reactants (isocyanate group-containing organic compound and thiol) distinguishes the ultimate product over the dithiocarbamate initiators of Mezger. Per claims 1 and 5, the reaction product must still contain a thiocarbamate-functional organic compound, as do the Mezger initiators.

As such, Mezger is seen to fully meet the limitations of the claimed invention stipulating a free-radical (co)polymerization product of at least one olefinically unsaturated monomer prepared in the presence of at least one thiocarbamate-functional organic compound (claims 1 and 5), and wherein the at least one thiocarbamate-functional organic compound contains at least two thiocarbamate groups (claims 2/3, 7/8).

Claims 1-3 and 5-8 are rejected under 35 U.S.C. 102(b) as being anticipated by US 5189112 to Clouet.

Clouet, in Examples 8-15, details the synthesis of graft copolymers by *free-radical* polymerization of styrene and hydroxyethyl methacrylate from the “polyiniferters” of Examples 7a and 7b. As depicted in Example 7a, the “polyiniferters” have pendant thiuram groups that contain two thiocarbamate functionalities (see, col. 7, lines 19-30).

Thus, applied to the rejected claims, Clouet is seen to describe a “(co)polymer [graft copolymer] comprising a free radical (co)polymerization product of at least one ethylenically unsaturated monomer [e.g., styrene] in the presence of at least one thiocarbamate-functional organic compound” [“polyinifierter” with pendant thiuram groups containing two thiocarbamate functional groups].

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As such, claims 1-3 and 5-8 are deemed to lack novelty.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 2396997 to Fryling.

Fryling discloses the polymerization of unsaturated organic compounds in the presence of sulfur-containing *modifiers* of polymerization (page 1, lines 33+ of right-hand column).

The working examples detail the polymerization of various ethylenically unsaturated monomers in the presence of putative free radical initiators - e.g., hydrogen peroxide and benzoyl peroxide in Examples 1 and 4. However, instead of a thiocarbamate-functional organic compound, specific species of mercaptan and dioxanthogen disulfide are used in the working examples.

Thus, Fryling differs from the rejected claims only in that polymerization in the presence of at least one thiocarbamate-functional organic compound is not disclosed in a specific embodiment.

Nevertheless, Fryling broadly teaches the utility of five subclasses of sulfur-containing compound, including *thiocarbamic* acids and the salts and sulfides derived therefrom; see page 3, lines 65+ of the left-hand column where the depicted formulae contain one or two thiocarbamate groups (e.g.,  $(R)_2N-C(=S)-S-A$ ). Fryling generally indicates the alternativeness among thiocarbamic acids and such derivatives on the one hand, and mercaptans (designated (1)) and xanthogenic acids and their salts (designated (4)) on the other (see page 2, right-hand column to page 3, top of right-hand column). Hence, one would have had a reasonable expectation of thiocarbamic acid salts and sulfides performing equivalently to mercaptans and xanthogenic sulfides in the process of Fryling. Such expectation of equivalent performance would have led one of ordinary skill in the art to modify Fryling by adding a thiocarbamate functional organic compound (e.g., thiocarbamic acid salt or thiuram disulfide) to the disclosed process as a modifier of polymerization, in lieu of a mercaptan or xanthogenic sulfide.

As to claims 4 and 8, it is not seen how the recited reactants (isocyanate group-containing organic compound and thiol) necessarily produce a reaction product different to the thiocarbamic acid salts and sulfides taught by Fryling as discussed above.

As to claim 9, it is considered that the "regulating" ability of thiocarbamate-functional organic compounds is at least implied by Fryling's teaching of the ability of sulfur-containing compounds to increase the plasticity, elasticity and solubility of

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polymeric materials prepared in their presence (page 1, lines 30+ of right-hand column), and of thiocarbamic acid and the salts and sulfides derived therefrom as a subclass of such sulfur-containing compounds (page 3, paragraph (5)).

Accordingly, the subject matter of claims 1-9 is deemed to have been *prima facie* obvious to one having ordinary skill in the art at the time of applicants' invention.


No claims are allowed.

Any inquiry concerning this communication should be directed to Examiner F. M. Teskin whose telephone number is (571) 272-1116. The examiner can normally be reached on Monday through Thursday from 7:00 AM - 4:30 PM, and can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached on (571) 272-1114. The appropriate fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

FMTeskin/06-10-05

  
FRED TESKIN  
PRIMARY EXAMINER  
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